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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,429	03/23/2004	Bayram Arman	D-21406	2937
27182	7590	10/12/2006		
PRAXAIR, INC. LAW DEPARTMENT - M1 557 39 OLD RIDGEBURY ROAD DANBURY, CT 06810-5113			EXAMINER DOERRLER, WILLIAM CHARLES	
			ART UNIT	PAPER NUMBER
			3744	

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

10/806,429

Applicant(s)

ARMAN, BAYRAM

Examiner

William C. Doerrler

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the dashpot not being in fluid contact with the refrigerant must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Figures 1 and 2 only shows the vibration damping structure as part of the fluid line. Applicant is now stating that other possibilities exist. These are not shown in the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1,2 and 4-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has stated that the dashpot need not be in fluid communication with the refrigerant. Applicant's original disclosure does not specify how the vibrations are dampened by the dashpot if the dashpot is not in fluid communication with the pulsing refrigerant.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,2 and 4-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, as amended ends with “; and”. It is unclear if structure was left out of the claim that applicant intended to claim. Claims 2 and 4-10 depend from claim 1, so they are unclear by their association.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6,9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corey et al in view of Wood.

Corey et al disclose applicant's basic inventive concept, a cryocooler with a linear motor and a connecting tubing having a volume significantly higher than the stroke volume of the linear motor, substantially as claimed with the exception of specifying that the connecting tubing has a volume twice that of the stroke volume or stating what the cryocooler is used for and using a dashpot to support the tubing to restrict vibrations. Wood shows the supporting of piping with a dashpot with a piston (which comprises mass) and a spring, to restrict vibrations to be old in the support art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Wood to modify the cryocooler of Corey et al by supporting the tubing with a dashpot to reduce the transmission of vibrations. In regard to claim 2, it is considered obvious to an ordinary practitioner in the art that twice the volume of the stroke volume is "significantly higher" than the stroke volume as taught by Corey et al. As such claim 2 is seen as obvious in light of the language of the Corey et al reference. In regard to claim 10, it is noted that superconducting magnets generally have to be cooled to

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cryogenic temperatures to ensure superconductivity and that cryocoolers are generally used for this purpose. As such to use the cryocooler of Corey to cool a superconducting magnet of an MRI device is seen as an obvious use for any efficient cryocooler, particularly one that is taught to reduce vibrations, which are known to effect the resolution of MRI devices.

Claims 1,2,4-6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corey et al in view of Kawano (5,904,046).

Corey et al disclose applicant's basic inventive concept, a cryocooler with a connecting volume significantly greater than the stroke volume of the linear motor which powers it, substantially as claimed with the exception of using a dashpot (including a spring resisted piston, which represents a mass) in the line connecting the linear motor to the expansion space. Kawano shows this feature to be old in the cryocooler art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Kawano to modify the cryocooler of Corey et al by using a dashpot (including as piston, which represents a mass, which is resisted by a spring) in the line connecting the motor and the cryocooler to improve the efficiency of the cryocooler by improving the phase difference between the displacement of the working fluid and the pressure oscillations. In regard to claim 2, it is considered obvious to an ordinary practitioner in the art that twice the volume of the stroke volume is "significantly higher" than the stroke volume as taught by Corey et al. As such claim 2 is seen as obvious in light of the language of the Corey et al reference. In regard to claim 10, it is noted that superconducting magnets generally have to be cooled to cryogenic temperatures to

ensure superconductivity and that cryocoolers are generally used for this purpose. As such to use the cryocooler of Corey to cool a superconducting magnet of an MRI device is seen as an obvious use for any efficient cryocooler, particularly one that is taught to reduce vibrations, which are known to effect the resolution of MRI devices.

Allowable Subject Matter

Claims 7 and 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1,2 and 4-6 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,938,426 in

view of Corey et al. Applicant's prior patent claims the same inventive concept, a mechanical resonator (a piston with mass and a spring) in the fluid line between a linear motor and the cryocooler, substantially as claimed with the exception of the connecting tubing having a volume significantly higher than the stroke volume of the motor. Corey et al show this feature to be old in the cryocooler art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Corey et al to modify the claims of applicant's earlier patent by using a connection tube with a volume greater than the stroke displacement of the linear motor to reduce vibrations in the system.

Response to Arguments

Applicant's arguments filed 9-27-2006 have been fully considered but they are not persuasive. Applicant states that the dashpot of claim 3(originally, now added to claim1), need not be in fluid contact with the refrigerant. This is in contradiction with the original drawings. No 112 1st paragraph rejection was given for new matter because the original specification, although still seen by the examiner to lead one to believe that the dashpot is in fluid communication never positively states such. The portion of the specification applicant has cited to show that the dashpot need not be in fluid communication with the refrigerant is merely seen as a broad statement of what may be used, without specifying where such devices would be placed. In the remarks, applicant has stated that the refrigerant need not contact the dashpot. This leaves applicant's dashpot as a support for a fluid passage which may vibrate. This is exactly what is

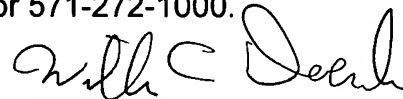
shown by Wood, and all that is lacking in the Corey et al reference. In regard to the 103 rejection with Kawano, it does not matter that Kawano may not reduce vibrations as well as applicant's device, or that the stated reason for placing the dashpot may not be to reduce vibrations. Kawano would lead one of ordinary skill in the art to add a dashpot to the pulse tube to recover work. This dashpot will inherently absorb some of the vibration from the system. Applicant has ignored the double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William C Doerrler
Primary Examiner
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WCD